FOURTH EXPEDITION TO NICARAGUA

Frank C. Seymour

To observe the seasonal changes was the special purpose of our fourth botanical expedition to Nicaragua. Our first botanizing there having been in the winter of 1968-69; our second also in the winter of 1969-70; and our third in the spring of 1971, we made our fourth in summer, from June 27 to August 15, 1972.

In a land of perpetual summer, --at least of warm weather, -- how could plants know the right time to bloom? In a country where there are 365 growing days each year, what could regulate the time for harvest? One of the regulators appears to be the amount of precipitation. July and August are in the rainy season. Actually in those months in 1972, the country was undergoing a severe drought. Excellent as this was for drying specimens in rain-forests, it was not so good for those who counted on a deluge of rain to grow crops. Nevertheless, enough rain fell in spring and summer so that the first feature to impress us descending from the sky on the airport in Managua was the bright greenness of the vegetation in contrast to the sear brownness of the landscape in December and January on former trips.

The second factor regulating the flowering and fruiting seasons for plants could be temperature. Nicaraguans had told us that July and August were lower in temperature than January and December. How could this amazing statement be true? In December and January, the sun, although farther away, blazed down all day long almost without interruption, from a cloudless sky. In July and August, in contrast, the sun although nearer in the heavens, was frequently intercepted by clouds. When clouds covered the sun, it was noticeably not so hot. When there were no clouds, the heat was more intense than ever in summer. Although humans might not be aware of any coolness, the subtle difference may affect plants. Certain species with which we had become familiar in December and January were in July and August conspicuous for their absence. Among many such absentees are Hyparrhenia rufa (Nees) Stapf and Tithonia rotundifolia (Miller) Blake.

Another feature, astonishing to northerners, was the sight of shadows pointing southward! This threw me into confusion when I tried to determine compass directions in the ordinary manner of a northerner. It just didn't work. What was wrong? Pondering to figure out the reason, in the course of time, I realized that the sun was nearly over the Tropic of Cancer (23 1/2 degrees N.) whereas we were south of that Tropic. We had never before been farther south than the sun. Under the circumstances, of course the shadows pointed southward.


FOURTH
BOTANICAL EXPEDITION
1972
MAP OF
NICARAGUA
Localities of collections
marked by black circles.
HONDURAS
SALVADOR
CARIBBEAN SEA
PACIFIC OCEAN
COSTA RICA
Departments
by number
1. Boaco
2. Carazo
3. Chinandega
4. Chontales
5. Comarca del Cabo
6. Esteli
7. Granada
8. Jinotega
9. Leon
10. Madriz
11. Managua
12. Masaya
13. Matagalpa
14. Nueva Segovia
15. Rio San Juan
16. Rivas
17. Zelaya
18. Lake Managua
19. Lake Nicaragua

While our headquarters were, as on other expeditions at the Escuela Nacional de Agricultura y Ganaderia, most of our time was spent in rain-forests, either in the eastern area characterized by rain-forests or in rain-forests on mountain slopes in the western dry area. Again we express our thanks to Dr. Noel Somarriba B., Director of the School, and his staff for their courtesy in extending to us the use of the dormitory and the facilities of their herbarium and laboratory for drying our collections. In appreciation for favors, we left a set of our specimens to swell their growing herbarium which I estimate at about 8,000 specimens. It is the only herbarium in Nicaragua.

The following will be a day by day account of our collecting, giving the localities and numbers and special features of the localities. On this fourth expedition, my only companion coming from the United States was my great-nephew, Stuart Bradley Robbins, who proved himself a natural born botanist and very able collector.

A brief outline of this expedition falls naturally into six parts as follows:

West: June 27 - July 3

Bilwaskarma region: July 3 - July 14

Puerto Cabezas: July 14 - July 17

Managua, one-day trips: July 17 - July 28

San Bartolo, week-end: July 28 - July 31

Managua, short day-trips: July 31 - August 6

June 28. Having arrived in the airport of Managua at 7:15 a. m., on June 27 Robbins and Seymour lost little time. By the morning of the next day, we were on our way to Jalapa - a trip which required the entire day by bus. Jalapa is in Department Nueva Segovia in the extreme north, near Honduras and proved to be in the western dry area, although we had hoped that it was far enough eastward to be in rain-forest. This was not the case. The lush growth of rain-forests was not found. Jalapa is at the eastern end of an extensive level plain, surrounded on the east, north and south by a ridge of hills. Rising before dawn on June 29, we climbed one of the hills to the north and collected what we could, and not fail to catch in the middle of the morning, the one bus back to Managua. The vegetation was relatively uninteresting.

Collection numbers: Robbins 5485-5501. Seymour 5502-5536.

July 1. On the way to Jalapa, it had been necessary to change busses at Ocotal. There Seymour made the disastrous mistake of drinking some pineapple juice, rather than offend a chance acquaintance. As a result, Seymour was laid up with dysentery, while Robbins went by invitation with two Englishmen, entomoligists, to Volcano Santiago, Department Masaya. This was rain-forest, characterized by Muntingia Calabura L. and Lantana glandulosissima Hayek. Robbins 5537-5554.

July 2. Near the Escuela Nacional de Agricultura y Ganaderia, which will hereafter be called simply the Escuela, Seymour collected casually a Palm and a Heliotrope, nos. 5555 and 5555a.

The second part of our expedition, beginning July 3, consisted of collections in Bilwaskarma, mostly on one-day short forays to the nearest rain-forests. Bilwaskarma is on the Rio Coco, the boundary between Nicaragua and Honduras, thus in the extreme north in Comarca del Cabo near Waspan. Both communities are in an extensive area of pine savannas. Over most of the area, extending in one direction, (south-east) to Puerto Cabezas, pines are sparse, due evidently to frequent burning of the low vegetation. On the grounds of the Thaeler Memorial Hospital, however, where the land is protected from fire, the pines are close together. In this area of pine savannas, the soil is mostly dry and sandy, the water in the streams is clear and clean, delightful for bathing.

July 4. We express our thanks to Dr. and Mrs. Theodore H. Rights for the hospitality of the Moravian Mission stationed in Bilwaskarma. We were privileged to lodge in the guest house and to get our meals at the dining hall refectory of the Thaeler Memorial Hospital. Casual collections on the Hospital ground. Robbins 5556-7. Seymour 5558, Tillandsia usneoides L.

July 5. We were fortunate to arrange with Mr. Muller to convey us in his jeep to rain-forests during the eleven days spent here. The first trip in this region took us for many kilometers through the pine savannas to France ya Sirpi. stopping twice on the way, first at Chemical Plant, later at an unnamed locality nearer to France ya Sirpi, but still in pine savanna. Chemical Plant was so named because of a factory located there, producing turpentine in the midst of a large supply of pine trees for raw materials.

Chemical Plant is characterized by an abundance of Miconia Lundelliana L. Wms. and at least 5 other species of Melastomataceae. Robbins 5559-61; 5582-5594. Seymour 5562-5581; 5597-5601.

At the second stop, 3/4 of the distance to France ya Sirpi, the habitat was similar but added Chiococca alba (L.) Rich., Miconia serrulata (DC.) Naudin, M. oinochrophylla Donn. Smith and M. hyperprasina Naudin to our list for the day.

France ya Sirpi, our major objective, is rain-forest. Spelling calls for a comment here. A man from the United States whom we met at Bilwaskarma made the remark:"Around here people spell any way they happen to want to." This is evidenced by the fact that on last year's labels this locality was spelled "Francia Sirpi." Such variations occur in spite of our efforts to make the spelling correct. The same person sometimes spelled the same name in different ways at different times.

We acknowledge with thanks that most of our Melastomataceae for this summer and other years have been identified by Mr. Charles E. Schnell. Robbins 5595-5596. Seymour 5602-5621.

Among the characteristic plants of this locality are Rhynchospora cephalotes Vahl, very abundant in the pine savannas; Smilax velutina Killip & Morton; Vittaria minima (Baker) Benedict; 2 species of Costus; Cephaelis tomentosa (Aubl.) Vahl; Chrysophyllum mexicanum Brandeg. Robbins 5622-5630. Seymour 5631-5663.

Casual collections near Waspan on the return trip. Seymour 5664-5665.

July 6. No collecting.

July 7. Bihmona or Bismona, as it is variously spelled. Here the land was open, with few trees along a sizable creek, eastward from Waspan, still in Comarca del Cabo. Floating in quiet water near the shore was an unidentified member of the Onagraceae, not seen elsewhere this year or in other years. In similar quiet water was a Nymphaea, rarely seen in Nicaragua. A large Eleocharis, not identified, formed a large colony along the shore. In the shallows was Mayaca fluviatilis Aubl. Robbins 5666-5688. Seymour 5689-5752.

One kilometer westward on our return trip to Bilwaskarma and Waspan, in swampy land with black soil along a small creek, a different assortment appeared including Eriocaulon decangulare L. f. parviceps Moldenke, 2 species of Xyris, a Spiranthes (not seen before), with Rhynchospora barbata (Vahl) Kunth and other species of that genus. Many thanks to Dr. Henry K. Svenson for identifying many of our Cyperaceae and to Dr. Harold N. Moldenke for identifying our Eriocaulaceae.

On the way homeward, in pine savanna, a palm, Seymour 5775.

July 8. No collecting.

July 9. Local collections in Bilwaskarma. Robbins 5776-5777. Seymour 5778-5789.

July 10. Puente Pozo Azul along Kornuk or Kornug Creek, where we collected a year ago in the spring. The Creek has cut a deep gorge in the pine savanna, wearing even through solid rock to some depth. Amaioua corymbosa Bth. was one of the species new to us. This identification is another of those for which I thank the Missouri Botanical Garden. For identifying our Xyridaceae including the next species, I thank Dr. Robert Kral. This is one of the few localities where Xyris ambigua Beyr. was found. Robbins 5790-5799; 5814. Seymour 5800-5824.

The suspension bridge here is notable as it is said to be the only bridge of its kind in Nicaragua.

Moving on to a place farther upstream, we stopped at a spot called Old Bridge because some time ago there had been a bridge across the Creek. The habitat was very similar to the preceeding. Here weadded another Xyris to our list, Xyris Baldwiniana Schultes, Robbins 5829, and an unidentified Utricularia and an unidentified Lycopodium (not L. cernuum L.) To reach the river, the jeep had to push its way through extensive thickets of Helicteres guazumaefolia HBK.

July 11. In pine woods of the Thaeler Memorial Hospital, a species apparently Hypoxis and grasses. Seymour 5850-5855.

July 12. Same locality. Local collections. Seymour 5856-5860.

July 13. Miguel Bikou. Almost without exception the richest rainforest found in all our travels. The species are largely unidentified, but include Trichomanes diversifrons (Bory) Mett., Pteris pungens Willd., Dictyoxiphium panamense Hk., Psychotria patens Sw. and seven species of Melastomataceae. Robbins 5861-5877. Seymour 5878-5927.

July 14. One number, Setaria geniculata (Lam.) Beauv., Seymour 5927a.

This concludes our collections in the region of Bilwaskarma in 1972. We proceeded to Puerto Cabezas, Department Zelaya.

July 15. In the city of Puerto Cabezas, Terminalia Catappa L., Brassavola nodosa (L.) Lindley, Polypodium persicariaefolium Schrader and P. polypodioides (L.) Hitchc. Robbins 5928-5929. Seymour 5930-5931.

July 16. Returning northwestward from Puerto Cabezas, a few kilometers toward Bilwaskarma, we collected at a place called Kamla or Tamla or Puente Septimo (Seventh Bridge) along and near a creek. The land was mostly an open savanna, very level, with rich black soil. Species unusual to us include Symphonia globulifera L.f., Xylopia aromatica (Lam.) Eichl., four species of Paspalum, Cassia flexuosa L. and nine species of Melastomataceae. Robbins 5932-5946. Seymour 5965-6031.

The same day on a beach in Puerto Cabezas, Sargassum sp., Cyperus ligularis L. and Coccoloba Uvifera (L.) Jacq. Robbins 5947-5951. Seymour 5952-5964.

July 17. No more collecting here. Returned to Managua, ending the third part of the expedition.

July 18. Casual collection, Chloris virgata Sw., Seymour 6032a.

Beginning of fourth part of expedition.

July 19. Local collections at the Escuela. Seymour 6032-6034.

July 20. Local collections near the Escuela. Seymour and Robbins 6035-6036.

July 21. Juigalpa, Department Chontales. Thither by a long ride, we traveled by bus hoping to reach another rain-forest or another part of the rain-forest which covers much of the Department Zelaya and extenos into other departments like Chontales. In the city, two weedy species of Eragrostis. Seymour 6037-6038.

July 22. Juigalpa. In the city, some weeds. Seymour 6039 and 6040. No taxi driver could be found who would take us to a rain-forest. It was too far away, they said. Compelled thus to seek a compromise, we climbed aboard the bus for Managua and alighted at a tiny village named San Francisco, not to be confused with other localities by the same name but in different departments. This was not rain-forest but the valley of an unnamed (on available maps) branch of the Tecolostote River. The mostly unidentified collections include Casearia nitida (L.) Jacq. and Milleria quinquefolia L., the latter encountered three or four times in Nicaragua, here abundant. For the identification of these two species and many others mentioned in this article, I am very grateful to the Missouri Botanical Garden.

July 23. In the vicinity of the Escuela. As described in previous articles in Phytologia, the Escuela is situated in a level area where the soil is rich, characterized by volcanic ash and abundant under-

streams which flow even in the driest weather. Thus deep-rooted plants have a continual supply of moisture. Lagascea sp. #6092 was not seen elsewhere on any of our expeditions. Seymour did not collect on this date. Robbins 6088-6092.

July 24. No collecting.

July 25. In the vicinity of the Escuela, Robbins, Passiflora sp. 6093. Seymour, Panicum sp. 6094. In the afternoon, a party of about 25 students of the Escuela accompanied Seymour and Robbins to Mombacho, an extinct volcano, near the city of Granada. We did not reach the summit but on the side of the mountain, the group found numerous species and Seymour pressed a few, among them Muntingia Calabura L. Although it is one of the highest mountains in Nicaragua, neither it nor any other mountain can boast of snow even in the coolest weather. The sides of the mountain support in places, a rain-forest. A number of collectors have sampled the flora of this mountain but it has promise of a goodly number of species yet to be found in its lush growth. Seymour 6095-6105.

July 26. Near the Escuela, Panicum fasciculatum Sw. Seymour 6106.

July 27. Momotombo is another extinct volcano and one of the highest mountains in Nicaragua. Its vegetation is not nearly as luxuriant as that of Mombacho but yielded a different selection of interesting species such as Luehea candida (DC.) Mart., Margaritaria nobilis L. f. and Stemmadenia obovata (HJA.) K. Sch. This was supposed to be rainy season but actually we experienced nothing more than slight showers except twice. This was one of the occasions for a heavy downpour, said to be artifically produced. Seymour did not go on this trip, but Robbins and his companions, Albert St. Clair and Jose Cuevas returned soaked to the skin. Robbins 6107-6123.

July 27. In the meantime, Seymour spotted a few ordinary species near the Escuela. 6124-6131.

July 28. Off by plane to spend a weekend in San Bartolo, the fifth part of this expedition. This locality was one of the richest collecting grounds in all of our four expeditions. It is an isolated community in rain-forest country in the Department Rio San Juan near the boundary of Department Chontales, a day's journey on horseback from San Carlos, otherwise reached by airplane which landed twice a week. The hacienda occupies a large clearing where large herds of cattle come and go. Encircling the hacienda are rich rain-forests. Except near the hacienda, botanical collecting was accomplished on horseback. Robbins 6132-6142. Seymour 6143-6162.

July 29. San Bartolo. Excursions into different parts of the rain-forest in morning and afternoon. Ferns included Polypodium cupreolepis Evans and Asplenium formosum Willd. Grasses included Pharus latifolius L. and Paspalum lividum Trin. Robbins 6163-6178. Seymour 6179-6218.

July 30. San Bartolo. Excursions into rain-forests, partly the same as yesterday, partly different. Helicteres guazumaefolia HBK. was common. Cuphea carthaginensis (Jacq.) Macbride and Morinda panamensis Seem. were among our collections of the day. Robbins 6219-6233. Seymour 6234-6250.

July 31. The weekend being over, we boarded the plane to return to Managua and the Escuela. As weather was too humid in San Bartolo for drying specimens, this last day of July was devoted to getting them thoroughly dry. No collecting.

August 1. Mombacho, again. Our glimpse of the plants of this mountain lured Robbins to another attempt to capture some of its choice species. With some companions, he drove part way up the height but did not reach the summit. In his press when he returned were Polypodium fructuosum Maxon & Weath., P. Kuhnii Fourn., Asplenium fragrans Sw. and Lantana maxima Hayek. Many of our Verbenaceae including the last have been identified by Dr. Harold N. Moldenke to whom we express our thanks. Robbins 6251-6273.

August 1. Seymour, having too many specimens to be dried, was kept near headquarters, but picked up a few grasses near the Escuela. Seymour 6274-6273.

August 2. Managua. Getting specimens ready to ship is always time-consuming even when carried on currently. Collecting for this season was almost over. The only number for the day was a Lamourouxia from Masaya, contributed by a student, 6282.

August 3. Managua, near the Escuela, a legume. Robbins 6283.

August 4. Same place. Seymour 6284-6286.

This day, Robbins succeeded in getting his exit visa and took his flight for Miami, Florida. Seymour being delayed in obtaining an exit visa, used his time partly in working on the 3,000 specimens which he and his companions have contributed to the herbarium of the Escuela, partly in making last-minute harvests in localities nearby.

August 5. Managua, near the Escuela. Common plants, mostly

grasses, of which we did not have full sets previously. Seymour 6287-6299.

August 6. Santo Tomas. This being Sunday, there was no chance to get an exit visa, so a day's journey into a rain-forest was permis - sible. The trip by bus from Managua to Santo Tomas is uphill so much that the bus took 5 hours to go but only 4 hours to return. On the return trip, the bus was so crowded that Seymour stood most of the way. Growth was so luxurious only a short hike from the bus route that little time was spent in hunting for good material. Seymour put plants into his field press as fast as he could until the press was full and it was time to catch the bus back to Managua. Had he but known and had his press been able to hold more, he could have collected longer, for the bus was an hour late! Seymour 6300-6327.

August 7. Managua. The day was spent in preparation of yesterday's collections and in further attempts to get an exit visa.

August 8. Managua. With my exit visa at last in hand, two hours were spent in shipping collections to the States by air freight. This accomplished, it was suddenly discovered that a plane for Miami would leave in 35 minutes. 35 minutes to return to the Escuela 3/4 miles away for baggage and get through the preliminaries to board the plane! He made it!

I wish to acknowledge with thanks to Dr. Richard A. Howard, Director of the Arnold Arboretum, and Dr. Reed C. Rollins, Director of the Gray Herbarium, and Dr. Hubert W. Vogelmann, Director of the Pringle Herbarium, the privilege of examining specimens in their respective herbaria by way of identifying my specimens from Nicaragua.

With each succeeding expedition, many more species become familiar and the ability to be more selective in collecting increases. In ending this expedition, Seymour sighed for the places still untouched and the many species still awaiting discovery. The accompanying map shows only places visited this summer. If a map should be prepared showing all the localities where he and his companions have collected, it would show samplings from a large part of Nicaragua. Cabo de Gracias a Dios and many other choice areas still remain unexplored beckoning to future expeditions.

The Pringle Herbarium,

University of Vermont

References to articles giving accounts of previous expeditions are appended.

First expedition, Dec. 3, 1968 to Jan. 16, 1969, Phytologia 22: 441-444. 1972

Second expedition, Dec. 15, 1969 to Jan. 29, 1970, Phytologia 23: 440-451. 1972

Third expedition, Feb. 2 to Apr. 10, 1971, Phytologia 25: 446-457. 1973